

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims:

- 1           1. (Currently amended) A method for managing heap memory in a  
2   multitasking system, comprising:  
3            reserving a guaranteed amount of heap memory for a task from a common  
4   heap in the multitasking system, wherein the heap memory reserved for the task is  
5   separate from heap memory reserved for all other tasks in the common heap of the  
6   multitasking system;  
7            receiving a request from the task to allocate heap memory for a new  
8   object; and  
9            if heap memory is available in the guaranteed amount of heap memory for  
10   the task, allocating heap memory for the new object from the guaranteed amount  
11   of heap memory;  
12   |        if heap memory is not available, checking if surplus heap memory is  
13   available in the common heap;  
14   |        if surplus heap memory is available ~~so~~, reserving an additional amount of  
15   heap memory to the task from the common heap and allocating heap memory for  
16   the new object from the additional amount of heap memory, whereby allocating  
17   heap memory for the new object from the additional amount of heap memory  
18   delays garbage collection; and  
19   |        if surplus heap memory is not available, performing garbage collection on  
20   the heap memory reserved for the task, wherein the task space is separate from all  
21   |   other ~~task-space spaces~~; ~~whereby~~

22        wherein other tasks continue normal execution without interruption due to  
23        garbage collection, ~~or subsequent memory compaction.~~

1            2. (Previously presented) The method of claim 1, wherein if surplus heap  
2        memory is not available in the common heap in addition to heap memory  
3        allocated to tasks, the method further comprises  
4            performing garbage collection on heap memory to reclaim unused reserved  
5        heap memory, and  
6            allocating heap memory for the new object from reclaimed surplus heap  
7        memory.

1            3. (Previously presented) The method of claim 1, wherein reserving the  
2        guaranteed amount of heap memory from the common heap includes:  
3            determining if there is sufficient heap memory available in the common  
4        heap; and  
5            if not, performing garbage collection to reclaim allocated surplus heap  
6        memory, and  
7            reserving heap memory for the task from reclaimed heap memory.

1            4. (Previously presented) The method of claim 1, wherein heap memory in  
2        the common heap is managed using a generational garbage collector.

1            5. (Original) The method of claim 4, wherein a plurality of tasks share an  
2        old generation of the generational garbage collector.

1            6. (Original) The method of claim 5, wherein each task of the plurality of  
2        tasks has a new generation of the generational garbage collector belonging to the  
3        task.

1           7. (Original) The method of claim 4, wherein the generational garbage  
2 collector is a copying garbage collector.

1           8. (Currently amended) A computer-readable storage medium storing  
2 instructions that when executed by a computer cause the computer to perform a  
3 method for managing heap memory in a multitasking system, the method  
4 comprising:  
5           reserving a guaranteed amount of heap memory for a task from a common  
6 heap in the multitasking system, wherein the heap memory reserved for the task is  
7 separate from heap memory reserved for all other tasks in the common heap of the  
8 multitasking system;  
9           receiving a request from the task to allocate heap memory for a new  
10 object; and  
11           if heap memory is available in the guaranteed amount of heap memory for  
12 the task, allocating heap memory for the new object from the guaranteed amount  
13 of heap memory;  
14 |           if heap memory is not available, checking if surplus heap memory is  
15 available in the common heap;  
16 |           if surplus heap memory is available so, reserving an additional amount of  
17 heap memory to the task from the common heap and allocating heap memory for  
18 the new object from the additional amount of heap memory, whereby allocating  
19 heap memory for the new object from the additional amount of heap memory  
20 delays garbage collection; and  
21 |           if surplus heap memory is not available, performing garbage collection on  
22 the heap memory reserved for the task, wherein the task space is separate from all  
23 other task-space spaces; ~~whereby~~  
24           wherein other tasks continue normal execution without interruption due to  
25 garbage collection, ~~or subsequent memory compaction.~~

1           9. (Previously presented) The computer-readable storage medium of claim  
2   8, wherein if surplus heap memory is not available in the common heap in  
3   addition to heap memory allocated to tasks, the method further comprises:  
4           performing garbage collection on heap memory to reclaim unused reserved  
5   heap memory, and  
6           allocating heap memory for the new object from reclaimed surplus heap  
7   memory.

1           10. (Previously presented) The computer-readable storage medium of  
2   claim 8, wherein reserving the guaranteed amount of heap memory from the  
3   common heap includes:  
4           determining if there is sufficient heap memory available in the common  
5   heap; and  
6           if not, performing garbage collection to reclaim allocated surplus heap  
7   memory, and  
8           reserving heap memory for the task from reclaimed heap memory.

1           11. (Previously presented) The computer-readable storage medium of  
2   claim 8, wherein heap memory in the common heap is managed using a  
3   generational garbage collector.

1           12. (Original) The computer-readable storage medium of claim 11,  
2   wherein a plurality of tasks share an old generation of the generational garbage  
3   collector.

1           13. (Original) The computer-readable storage medium of claim 12,  
2   wherein each task of the plurality of tasks has a new generation of the generational  
3   garbage collector belonging to the task.

1           14. (Original) The computer-readable storage medium of claim 11,  
2 wherein the generational garbage collector is a copying garbage collector.

1           15. (Currently amended) An apparatus that facilitates managing computer  
2 heap memory in a multitasking system, comprising:  
3           a computing device including a multitasking virtual machine;  
4           a reserving mechanism within the multitasking virtual machine that is  
5 configured to reserve a guaranteed amount of physical heap memory for a task  
6 from a new generation space within a common heap in the multitasking system,  
7 wherein the heap memory reserved for the task is separate from heap memory  
8 reserved for all other tasks in the common heap of the multitasking system;  
9           a receiving mechanism within the multitasking virtual machine that is  
10 configured to receive a request from the task to allocate heap memory for a new  
11 object;  
12           the reserving mechanism that is further configured to reserve an additional  
13 amount of heap memory to the task from the common heap;  
14           an allocating mechanism within the multitasking virtual machine that is  
15 configured to allocate heap memory for the new object from the guaranteed  
16 amount of heap memory; ~~memory~~  
17           a reserving mechanism configured to reserve an additional amount of heap  
18 memory to the task from surplus memory within the common heap and allocating  
19 heap memory for the new object from the additional amount of heap memory,  
20 whereby allocating heap memory for the new object from the additional amount of  
21 heap memory delays garbage collection; and  
22           a garbage collection mechanism configured to perform garbage collection  
23 on the heap memory reserved for the task, wherein the task space is separate from  
24 all other task-space spaces; ~~whereby~~

25        wherein other tasks continue normal execution without interruption due to  
26        garbage collection, ~~or subsequent memory compaction.~~

1            16. (Previously presented) The apparatus of claim 15, further comprising:  
2            a garbage collecting mechanism that is configured to perform a garbage  
3        collection on heap memory to reclaim unused reserved heap memory, and  
4            the allocating mechanism that is further configured to allocate heap  
5        memory for the new object from reclaimed heap memory

1            17. (Previously presented) The apparatus of claim 15, further comprising:  
2            a determining mechanism that is configured to determine if there is  
3        sufficient heap memory available in the common heap; and  
4            a garbage collection mechanism that is configured to perform a garbage  
5        collection to reclaim allocated surplus heap memory, and  
6            the reserving mechanism that is further configured to reserve heap memory  
7        for the task from reclaimed heap memory.

1            18. (Original) The apparatus of claim 15, further comprising a generational  
2        garbage collector.

1            19. (Original) The apparatus of claim 18, wherein a plurality of tasks share  
2        an old generation of the generational garbage collector.

1            20. (Original) The apparatus of claim 19, wherein each task of the plurality  
2        of tasks has a new generation of the generational garbage collector belonging to  
3        the task.

1           21. (Original) The apparatus of claim 18, wherein the generational garbage  
2   collector is a copying garbage collector.